

Fig. 1

1. <i>B. halodurans</i>	1	15 16	30 31	45 46	60 61	75 76	90
2. <i>acetobutylicum</i>	-	-	-	-	-	-	-
3 <i>Bst803-2065</i>	-	-	-	-	-	-	-
4 <i>PalcaligenesMatur</i>	MPPVGAVASLVTVMQ	KPTAETVNPNGQK	PVMPDSAKVPAASA	TWTNAEPDTLMERV	APEVQVVSN	KGPGADGMTVA	DLA 90
1. <i>B. halodurans</i>	91	105 106	120 121	135 136	150 151	165 166	180
2. <i>acetobutylicum</i>	LHLHENFTSIRNEII	EGSYFPKPVARRVEIP	KENGVRKIGIPTYM	DRFLQQAIAQILTQI	YDFTFSERSFGFRPK	RGHNAVRQAKQMK	126
3 <i>Bst803-2065</i>	QLKQNGKTLIASIF	NGKYCPKAARRVEIP	KEDGSRILLGIPI	DRTIQQAISQVLTPI	FETKFSENSYGF	RSAMQAIKKAKEFME	179
4 <i>PalcaligenesMatur</i>	DYIRAHWSTIRAQOLL	ACTYRPAPVRRVGIP	KEGGSTRGOLGIPTV	DRLIQQAIIQELTPI	FDDDFSPSSFGFRPG	RNAHDAVROAQCYIQ	128
	GIVKQYWPTEKLARLL	AGEYHPQAVRAVEIP	KPQGTTGOLGIPTSV	DRLIQQAIIQQLTPI	FDFLFSDYSYGF	RSTHQAJEMARAHVT	180
	I	II	III	IV	V	VI	-----
1. <i>B. halodurans</i>	181	195 196	210 211	225 226	240 241	255 256	270
2. <i>acetobutylicum</i>	EGYRWWVDIDLEKEF	DVNHDRALMKSSR	IDQPRVLQLIIRRLO	TGVMERGLVSPNTEG	TFOGGPLSPILLSNV	LDDELNELEKRGKLF	216
3 <i>Bst803-2065</i>	EGYRWWVDIDLAKYF	DVNHDKLMVALRK	IKDKRVLKLIIRRLO	SGVMINGVSETTERG	CFOGGPLSPILLSNV	LTDELRELEKRGKHF	269
4 <i>PalcaligenesMatur</i>	EGYRWWVDIDLEKEF	DVNHDLIMSCATTER	VKDCKVLRLLRAYLQ	AGVMIEGVKVQTEEG	TFOGGPLSPILLSNL	LDDELKELEKRGKLF	218
	AGHRWCYEDLEKEF	DVNHDLIMSCATTER	IKDKCVCVLRLIRRYLE	AGIMSGGVVSPROEQ	TFOGGPLSPILLSNL	LDDELRELERRGHRF	270
	VII	VIII	IX	-----	-----	-----	-----
1. <i>B. halodurans</i>	271	285 286	300 301	315 316	330 331	345 346	360
2. <i>acetobutylicum</i>	VRZADDNCIYVRSKR	AGLRIAMESVSPFIEN	RKAKVNREREKSAYADR	PWNRKFLEGFSFRGK	-DPKMRVSKESVYRKL	KQRIRELTSRRHSMK	305
3 <i>Bst803-2065</i>	CRYADDNCIYVRSKK	AGDRVARSITTFLEN	KLAKVNRKEKSAYADR	PWRRKEFGETTYQWY	GKIGIRVHEKSUKF	KAKIKAITARSNALN	359
4 <i>PalcaligenesMatur</i>	CRYADDNCIYVKSRL	AGQRYKOSICRPLEX	TKLKVNEEKSAVDR	PWKAFLGFSFTPER	-KARIRLAPRSIQL	KQRIRQLTNPNW515	307
	VRZADDNCIYVSPR	AGERVLYSVEREFLRE	RKLTIVRKRSQVAR	AWKCDYLGIGHSWHQ	-QPRLRVARMSSDRL	RDRMLLRSVARK	359
	V	VI	VII	-----	-----	-----	-----
	LN	G	YY				
1. <i>B. halodurans</i>	361	375 376	390 391	405 406	420 421	435 436	450
2. <i>acetobutylicum</i>	MSDRLRRLNRYLTGW	LGXYQVVDTPSILAQ	EWKWTTSAROKNLVRL	GIKAKAKPQWANSRK	GYWVAAHSPIMDYL	395	
3 <i>Bst803-2065</i>	IENRIIKLRCOILGW	LYFGIAEMTKLAKK	IDEWTTRRLRBLCKT	QWKKVTKYDNLRKF	SYMRIANSPILLSITL	449	
4 <i>PalcaligenesMatur</i>	MPPRIHRVNOYVMGW	IGYFRLVETPSVLTQ	IEGWWRRLRCLWL	QWKRURTRIRELRL	GLKETAVMEIANTRK	397	
	ATFKLQSQRPLEE	LDGWRHKLCVWIR	QWQOPPFLRNLMR	LGSEERANKSAFNGR	GPMMNSGAQHMHVAT	449	
	"X" Domain						

1 - SEQ ID NO: 13 2 - SEQ ID NO: 14 3 - SEQ ID NO: 2 4 - SEQ ID NO: 15



B.

651 GATGTTGGCTGTCAAGCAGAATTCCCTTCGGAACTCATCTGGAGAACGGTGAAGC
 721 CCAGAGGCCCTCAGATCGAGGGCTGACGCCAACCGGAAAGACTGAACTCACTCCGGG
 781 GAAGGAGAAGGAGAAGATCAAG

803 atggctttgtggaaacgcatacttagcagagacaaaccttcatacgg
 M A L L E R I L A R D H L I T
 848 qcgcctcaacccggcgtaacggccaaacaaaggcgcacccgggaaatcgac
 A L K R V E A N O C A P C I D
 893 ggatataccgcataactccgttattacatccgcgtactgg
 G V S T D Q L R D Y I R A K W
 938 agcncgatccgcgcggaaactttggcgccggaaacctacggccggccg
 S T I R A Q L L A G T Y R P A
 983 cctgtccgcgggggtggaaatccggaaacctggggcgccggccacacgg
 P . V . R . - V . - G . I . P . - K . - P . - G . - G . - T . - R .
 1028 cagctaggcattcccaacggctgttgtggccggatgtccaaacaaagcc
 Q L G I P T V V D R L I Q Q A
 1073 attttcaaaagaaactcaacccattttcgcacgcacttcaccc
 I L Q E L T P I F D P O F S P
 1118 tccagtttcggatccgtccggccggatggccatgcggccatgcgg
 S S F G F R P G R N A H D A V
 1163 cggcaacgcgcgaaggctacatccggaaagggtatcgccacgtggc
 R O A Q G Y I Q E G Y R Y V V
 1208 gacatggacccctggaaasggtttttgcgggtcaaccatgcac
 D M D L E K F P D R V N H D I
 1253 ttgtatggatgggggtggcccgaaaatgcggatggatggatgg
 L M S R A R K V K D K R V L
 1298 aaactgtatccgtgcctacttgcggatggatggatggatgg
 K L I R A Y L Q A G V H I E G
 1343 gtggaaatgtgcggatggggatggatggatggatggatgg
 V K V O T E E G T P Q G G P L
 1388 accccccctgtggccggaaatccgtgcggatggatggatgg
 S P L E R H I L D D L D K E
 1433 ttggagaaggaggatgtggaaatctgcggatggatggatgg
 L E K R G L K F R Y A D D C
 1478 aacatetatgtgaaatgtctgcggccggatggatggatgg
 N I Y V K S L R A G Q R V K Q
 1523 aycatccaaagggttttggggaaasegtcaaaatcaaaat
 S I Q R F L E K T L K L K V . N
 1568 gggggaaatgtgcgtggggccggatggatggatggatgg
 Z E K S A V D R P W X R A P L
 1613 gggtttagcttcacccggaaacgaaaaacgcggatccggatcc
 G F S F T P E R K A R I R L A
 1658 ccaaggatgcattcaacgttctggggatggatggatggatgg
 P R S I Q R L K Q R I R Q L T
 1703 aacccaaactggggatcatatogatggccggatggatggatgg
 N P N W S I S M P E R I H R V
 1748 atcaatacgatgtggatgtggatgtggatgtggatgtgg
 N Q Y V H G W I G Y F R L V E
 1793 accccgttgccttcggatccatcgatggatggatggatgg
 T P S V L Q T I E G W I R R R
 1838 cttcgcacttgtcaatgggttcataatggaaacgggtcagaa
 L R L C Q N L Q W K R V N T R
 1883 atccgtggatggatggatggatggatggatggatggatgg
 I R E L R A L G L K E T A V H
 1928 gagatggccaaatccggaaatggatggatggatggatgg
 E I A N T R K G A W R T T K T
 1973 cccgcaccccccggccatggccaaacccatggatggatgg
 P Q L H Q A L G K T Y W I A U
 2018 ggatccaaatggatggatggatggatggatggatggatgg
 G L K S L T Q R Y F E L R Q G
 2063 tga

CGAACCGCCCTAGTGCAGCCCGCATGCTAGGTGGT

2102 GTGAGGGGAGGGGGTTAGCCGCCCTCTACTCGATTCGTATTGTCATTCCGGCTAT

2162 GCCACCGAAACGGCCATGAAACGTCAAGCCCTCTCTTGATCGTCTCCCTCCCGC

2222 GCACCGGGTTGATEGAATAGCTGGTGTAAATGGGGCATTAACGAAATGGGAACGGGAAAC

Fig. 2

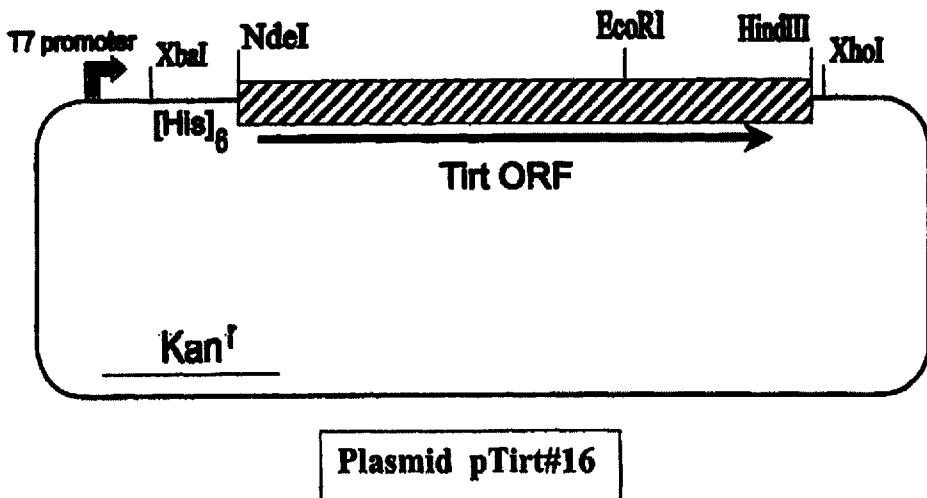
DNA - SEQ ID NO: 16

Protein - SEQ ID NO: 2

Bst2015

Fig. 8

A.



B.

T7 promoter
 1 TGGNNNNAGT NTTAACCT TTGNACCGCC NTAATACNAC TCACTATAGG
lac operator
 51 GGAATTGTGA GCGGATAACA ATTCCCCTCT AGAAATAATT TTNTTTAACT
 rbs His-tag
 101 TTAAGAAGGA GATATACCAt gggcagcg catcatcatcatcacg
 M G S S H H H H H H S
 > start of fusion *NdeI*
 151 cagcggctg gtgcccgcgc gcacgccaatat gcggcaaqac ctgaatctca
 S G L V P R G S H M R Q D L N L I
 > start of Tirt ORF
 201 tcccgccgaa ggagaagatc accatggttttggaaacg catttagcg
 P R K E K I T M A L L B R I L A
 > start of Tirt ORF
 251 agagacaacc tcatcacggc gctcaaaacgg gtcggaagcca accaaagggc
 R D N L I T A L K R V E A N Q G A

DNA Sequence - SEQ ID NO: 17

Amino Acid Sequence - SEQ ID NO: 18

Fig.

		<i>LN</i>	<i>G</i>	<i>YY</i>		
1 B. halodurans	VRYADDCHIYVRSKR	AGLRIMESVTSPEN	RLLKLYWEEKSAVDR	PWNRKFLGFSFTRGK	-DPMKRVSKESVKRL	KQIRELTSRHSK
2 C. acetobutylicum	CRYADDNNTYVRSKK	AGDRVMRSITRFEN	KLLKLYWEEKSAVDR	PWRKFLGFTFYOMY	GKIGIRVHEXSVKKF	KAKIKAITARSHALN
3 But03-2065	CRYADDCHIVVKSRL	AGORVKOSISORPLEK	TLLKLYWEEKSAVDR	PWKRAFLGFSFTPER	-KARIRLAAPSQIRL	KQRIRQYTNPWFNSIS
4 PalcaligenesMatur	<u>VRYADDCHIYVRSPR</u>	<u>AGERVLVSVFELRE</u>	<u>RLLKLYWEEKSKSVAR</u>	<u>AWKCDLYGGMWSHQ</u>	-OPRLRVARMSLDRL	RDRRMILRSYRARK
					VII	
					VI	
361	375	376	390	391	405	406
B. halodurans	MSDPLRRLLNRYLTYGW	LGXYQVWDTPSILAQ	IDAWIIRRRLMIRNK	EWKTTSARQNLVRL	GJKKAKAQWANSRK	GIVYVAHSPIMDYAL
C. acetobutylicum	IENRIIKLROCIIGN	LNFFGTAEMTKLAKK	IDETTRRLRLEMCYWK	QWKKVKTKYDNLRKF	GNNSKAWEFANTRK	SYRIANSPILSTTL
But03-2065	MPERIHVNQYVMGW	IGYTRIVETPSVLTQ	IEGWIIRRRLCOWL	QWKRVRTRIRELRL	GKETAVMEIANTRK	GAWTTTCKTPOLHOAL
PalcaligenesMatur	ATVYIERINPVLRGW	ASFKLUSQSKRPLEE	OKQOPPTRLNMLP	LGWVRRHKLRCVWR	GSEERANKSAFNGR	GPMWNSGAOHMINYAL

"X" Domain

TITANIC 15

1 - SEQ ID NO: 13 2 - SEQ ID NO: 14 3 - SEQ ID NO: 2

Bankruptcy Court

*Enlarged text
Added Seg ID#S*



B.

661 GATOTGGGTGCGAAGCAGAATTCTTTCGAACTCATCTGAGGAACCAAGGGTGAAGC
 721 CCAGAGGGCCTCAGATCGAGGGCTGAGCGCAACC CGCAAGACCTGAATCTCATCCCCGG
 781 GAAGGAGAAGGGAGAACATCACG

803 atggctttgtggasccatcttgcggagagacaaccatcatcag
 M A L L E R I L A R D N L I T
 848 ggcctcaacccggctcgaaaggccaaaccaggacccggggaaatcgac
 A L K R V E A N Q G A P G I D
 893 ggatgtatccaccataacttcgttattatccgcgttcactgg
 G V S T D Q L R D Y I R A H W
 938 agccacgtcccgccccaaacttttgcgggaaacctacccggccgggg
 S T I R A Q L L A G T Y R P A
 983 ccttgtccggatggatggaaatccggaaaccggggggccggccgg
 F .V .R .R .V .G .I .P .K .P .G .G .C .T .R .
 1028 caatggggatcccccacccgttggacccggctgtatcccaaccggcc
 Q L G I P T V V D R L I Q Q A
 1073 atttttcaagaactcacacccttttcgtatccatggacttccct
 I L Q E L T P I F D P D F S P
 1118 tccatgttcggatccctccggccgttaaccggccatgtccgttg
 S S P G F R P G R N A H D A V
 1163 cggccaaacgcgaaggctacatccaggaaagggtatcggtatcggt
 R Q A Q G Y I Q E G Y R Y V V
 1208 gacatggacccctggaaaatgttcttgcgtatgggtcaaccatgcacatc
 D M D L E K F P O R V N H D I
 1253 ttgtatggatccgggtggccggaaaatgtatgggtatggatccgggt
 L M S R V A R K V K D K R V L
 1298 aacatgtatccgttccatcttcgtcaaccggccgttatgtatgggt
 K L I R A Y L Q A G V H I G E
 1343 gtgtaaatgttcggatccggggaaaatgtatgggtatggatccggcc
 V K V O T E E G T P Q G G F L
 1388 agcccccgtgtggaaatccatcttcgtatggatccggatggaa
 S P L R H I L D D I D K E
 1433 ttggagaacgcgggatgtgtatccgtatccgtatccgt
 L E K R G L K F C R Y A D D C
 1478 aacatctatgtgtatggatctgcggccggacccgggtatggatcc
 N I Y V K S L R A G Q R V K Q
 1523 agcatccacgggtttttggagaaaatgtatggatcc
 S I Q R F L E K T L K L K V . N
 1568 gaggagaaaatgtccgggtggaccgcctcgatggaaacggggcttcg
 E E K S A V D R P W K R A P L
 1613 gggttttagttccacccggaaatgtatggatccggatcc
 G F S F T P E R K A R I R L A
 1658 ccaatgtcgattccacccgttgcgtatggatccggatcc
 P R S I Q R L K R I R Q L T
 1703 aacccaaatccgtggatcatatgtatccatggatcc
 N P N W S I S H P E R I H R V
 1748 aatcaataatgtatggatggatccgtatccgtatggatcc
 N Q Y V H G W I G Y F R L V E
 1793 accccatgtatccatggatccatggatggatcc
 T P S V L Q T I E G W I R R R
 1838 ctccgtatccgtatggatccatggatccatggatcc
 L R L C Q W L Q W K R V R T R
 1883 atccgtatggatccatggatggatccgtatccgtatggatcc
 I R E L R A L G L K E T A V H
 1928 gagatggccaaatccggaaaatggatccggatcc
 E I A N T R X G A W R T T K T
 1973 ccgcacactccacccggccctggggaaatcttcgtatggatcc
 P Q L H Q A L G R T T W I X U
 2018 gggtccaaatgttgcgtatccgtatggatccgtatggatcc
 G L K S L T Q R Y F E L R Q G
 2063 tga

CGAACCGCCCTAGTGCGGACCCGCATGCTAGGTGGT

2102 GTGAGGGGACGGGGGTTAGCCGCCCTCTACTCGATTCGTATTGTCAATCGCTAT

2162 GCCACOCGAAACGGCCPQAACGTCAAGCCCTTCCTTGTAGATCGCTCCCTCCGC

2222 GCACGCCGTTGATEGAATAGCTCGCTGTAAATGGCGGCAATTAAACGGAAACGGAAAC

Bst755

Bst1396

Bst2015

Bst2198

Fig. 2

moved
Fig. #

Enlarged
text

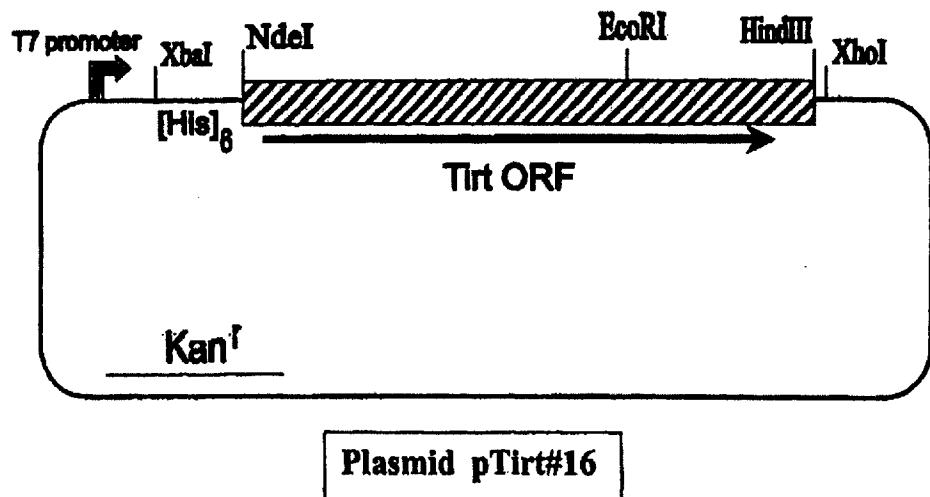
DNA - SEQ ID NO: 16

Protein - SEQ ID NO: 2

Added
Seq ID#s

Fig. 8

A.



B.

T7 promoter
 1 TGGNNNNAGT NTTTAAACCT TTGNACCGCC NTAATACNAC TCACTATAAGG
 lac operator
 51 GGAATTGTGA GCGGATAACA ATTCCCCTCT AGAAATAATT TTNTTTAAC
 rbs
 101 TTAAGAAGGA GATATACCAcat gggcagcgc catcatcatc atcatcacag
 M G S S H H H H H S
 > start of fusion NdeI
 151 caggccgcctg gtgccgcgcg gcagccat gcccgaagac ctgaatctca
 S G L V P R G S H M R Q D L N L I
 201 tcccgccgaa ggagaagatc acgatggctt tggtggaaacg catcttagcg
 P R K E K I T M A L L E R I L A
 > start of Tirt ORF
 251 agagacaacc tcatacggc gctcaaacgg gtcgaagcca accaaggagc
 R D N L I T A L K R V E A N Q G A

DNA Sequence - SEQ ID NO: 17
 Amino Acid Sequence - SEQ ID NO: 18

Added seq. ID #S